1. BACKGROUND, OBJECTIVES, SCOPE, AND METHODOLOGY

Prior to 1983, the State of North Carolina operated eight independent data centers with mainframe computers in the judicial branch and in seven executive branch agencies supporting approximately 500 computer terminals for end users:

- Department of Administration
- Department of Correction
- Department of State Transportation
- Employment Security Commission
- Department of Revenue
- Department of Justice
- Department of the State Treasurer
- Administrative Office of the Courts, Information Services Division

Beginning in 1983, the General Assembly enacted a series of General Statutes to manage the State's costs for information technology. It started by consolidating several of these data centers into the State Information Processing Services (SIPS) and forming a Computer Commission for oversight. SIPS was intended to provide shared resources for its client agencies as a means of controlling costs, to improve service to State agencies, and to improve the quality, usage, and management of the State's information technology resources.

Since then, both the magnitude and cost of the State's information processing have grown dramatically. In the intervening years, SIPS has been studied numerous times to determine how to better manage its cost and effectiveness. Recently under the pressure of the State's current fiscal constraints, the General Assembly acted to control the costs at SIPS and the agencies. For example, in 1991 it reduced budget line-item appropriations by five percent and invoked a temporary one-year moratorium on the purchase of personal computers.

Today, the agencies' demands and real needs for additional investment in information technology exceed North Carolina's ability to afford them. The State has to prioritize these needs, allocate the available funds accordingly, and manage each investment to achieve the intended results. The State needs a management structure and procedures to enable it to do this effectively. Much of our review has focused on this essential need.

Background on enabling legislation

In 1983, the General Assembly adopted legislation that amended General Statute (G.S.) 143-341(9) to authorize the Department of Administration, "with respect to all executive departments and agencies of State government, except the Department of Justice and the University of North Carolina," to ". . .provide information processing services on a cost-sharing basis. . . ." This operation has become known as SIPS. The formation of SIPS consolidated three other departmental data centers into the Department of Administration -- Correction, Transportation, and the Employment Security Commission. The Departments of Revenue and Treasury, while not exempted at that time, were never consolidated into SIPS.

The 1983 legislation (G.S. 143B-426.21) also created the Computer Commission to provide central oversight and policy decision making for the information system activities and agencies served by SIPS. The Commission had 13 designated members.

In 1987, the General Assembly enacted legislation (G.S.143B-426.40) that moved the operational reporting for SIPS from the Department of Administration to the Office of State Controller. That statute also authorized the Department of Revenue to deviate from SIPS' regulations and requirements. However, it did not exempt Revenue from oversight by the Computer Commission, which is sometimes mistakenly stated as being a result of that law.

This legislated reorganization also moved the data communications function to SIPS. However, voice communications remained the responsibility of the Department of Administration until the 1989 legislative session. At that point, voice and data communications were integrated and moved into SIPS as the State Telecommunication Services.

The 1989 session of the General Assembly changed the name of the Computer Commission to the Information Technology Commission (ITC) and added four members, bringing the ITC to 17 members.

Studies on information technology

North Carolina recognizes the need for information technology in operating the State government, but it views the ever escalating cost as a signal that the technology is not being adequately managed. The State has followed at least two paths to gain the desired management control. First, the General Assembly has repeatedly examined the State's activities in information technology and their costs. It has done this through commissions:

1981 -- State Computer Systems Study Commission
1987 -- State Information Processing Needs and Cost Study Commission
1991 -- Computer Services Study Commission

Second, SIPS itself has undergone frequent management studies, including the following:

1986 -- Review of general data processing controls at SIPS (Arthur Andersen & Co.)
1986 -- Administrative Analysis Study Report - SIPS Management Study
1987 -- Monitoring and Control over State Agency Computer Operation (State Auditor)
1988 -- Data processing controls review (State Auditor)
1989 -- Data processing controls review (State Auditor)
1990 -- Billing procedures (State Auditor)
1991 -- State Computer Center cost and service level analysis (Real Decisions Inc.)
1992 -- SIPS management review (Office of State Budget and Management)

Despite all of this scrutiny, North Carolina still has not achieved the uniformly high quality of systems and services at acceptable cost that its citizens need and are entitled to receive. As a consequence of fiscal pressures and the increasing need for citizen services, the North Carolina General Assembly recognized that it must reduce the costs of program service delivery and identify more efficient and effective ways of:

- Organizing, administering, and delivering services and programs
- Strengthening the State's financial planning, budgeting, and management systems
- Procuring and providing goods and services

The North Carolina General Assembly, in its 1991 session, authorized a year-long performance audit of all branches of State government to assist in evaluating government operations, restructuring and reforming service delivery, strengthening management practices, improving government efficiency and effectiveness, establishing priorities, and preserving and improving the quality of State services.

To facilitate the achievement of these goals, the Legislative Services Commission created a Government Performance Audit Committee (GPAC). GPAC is co-chaired by the Speaker of the House and President Pro Tempore of the Senate. In addition to the co-chairs, GPAC includes six members of the General Assembly, the State Auditor, and ten private sector leaders of North Carolina, who are organized in three subcommittees:

- Organization/staffing and personnel
- Planning, budgeting, program evaluation, and the financial model
- Information technology/telecommunications and purchasing

The performance audit was organized into two phases. The objective of the first phase was to review the following five major management systems:

- Planning, budgeting, and program evaluation
- Personnel
- Purchasing
- Technology
- Organization and staffing patterns

GPAC engaged KPMG Peat Marwick to assist in conducting Phase I of the performance audit. To facilitate the work of each subcommittee, Peat Marwick formed six functional teams that correspond to the five major segments listed above and the development of a financial model for projecting General Fund revenues and expenditures by major program. The Phase II analysis will build upon Phase I findings and recommendations. The analysis will focus closely on how individual program service delivery and management systems can be redesigned to better achieve mission-related outcomes in the most cost-effective manner.

Information technology and telecommunications audit objectives

The objectives of the Phase I performance audit were to:

- Assess the performance of the information technology and telecommunications functions through a comprehensive, statewide analysis of existing operations and related management policies and practices
- Assess the existence and effectiveness of internal controls associated with the technology functions
- Develop recommendations for improvements in cost-effectiveness, productivity, and service delivery levels, and internal controls
- Identify specific technology functions or organizations that appear to offer potential for significant improvements that should be analyzed as part of Phase II of the performance audit

Audit scope

The State of North Carolina manages and operates its information technology through Information Resource Management (IRM) divisions in each of its 22 executive branch agencies and in the legislative and judicial branches. Appropriations for the annual operation of the State's information technology and telecommunications services totalled approximately $97 million for fiscal year 1991.

Our review of the statewide information technology and telecommunications functions covered the legislative, judicial, and executive branches, excluding the campuses of the University of North Carolina system and the Community Colleges.

The technology subcommittee reviewed and approved several issues as areas of concentration for Phase I, and these form the organization of the findings and recommendations presented in this report. The subcommittee also defined the scope of fieldwork to include the following tasks:

- Detailed performance audits of ten agencies' IRM functions comprising approximately 75 percent of the State's budget for technology services
- Technical analysis of SIPS data center operations

Evaluation criteria

Our performance audit of technology was based on assessment of issues and evaluation of performance relative to a broad range of critical factors. Those factors and the criteria for evaluation were:

- **Utilization of technology** -- Technology should be appropriately current, available to all agencies, and used effectively for the benefit of the State
- **User satisfaction** -- Technology services should be provided at a sufficient level and quality to satisfy the requirements of the users
- **Technology plans** -- Plans should be well defined, achievable, coordinated across agencies, and consistent with users' programs and plans
- **Costs** -- User costs should be commensurate with the value of services received and competitive with other sources of such services
- **Technology standards** -- Standards should serve to facilitate maximum utilization of the best available technology and to leverage the value of assets and expertise across the agencies
- **Technology investments** -- Technology expenditures should be viewed as investments and justified based on their return in support of users' programs
- **Technology operations** -- Operations should be highly reliable and cost effective
- **Project management** -- Technology projects should be managed for acceptable results

Methodology

The tasks within our work plan are based on procedures that have been successfully applied in similar studies and that are in accordance with Government Auditing Standards:

- Preliminary survey
- Fieldwork and analysis
- Reporting

A summary of the individual subtasks of the technology work plan is provided below. All data were gathered during the period from mid-February through May 1992 unless otherwise specified. All findings reflect conditions as of that time.

Preliminary survey

Management interviews were conducted with the IRM managers from 14 executive branch agencies and the legislative and judicial branches. Department Secretaries and Deputy Secretaries also participated in several of the interviews. Additional meetings or interviews were conducted with other appropriate bodies such as the Information Technology Commission and the State Computer Services Study Commission. Exhibit 1-1 provides a list of the agencies and other participants. The interviews focused primarily on the status of each agency's application of information technology and telecommunications, related issues and opportunities.

The Information Resource Management groups in all branches of government and all executive branch agencies were also requested to supply several types of documentation about their operations. These agency-provided documents were compiled and reviewed to identify opportunities for improvement and to assess candidates for detailed review during fieldwork.

Comparative data were obtained from the National Association of State Information Resource Executives (NASIRE) and from direct requests to other states of similar size to North Carolina based on total appropriated budget.

Fieldwork and analysis

Based on the results of the preliminary survey and analysis, the subcommittee directed that the remainder of Phase I focus on five issues:

- **Governance of technology** - defining the process for the users of technology, the providers of technology services, and agency management to work together to serve the best interests of the State and to establish accountability for results from technology initiatives

EXHIBIT 1-1

PARTICIPANTS IN PERFORMANCE AUDIT OF INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS

General Assembly
Administrative Office of the Courts
Information Technology Commission
State Computer Services Study Commission
Department of Administration
Department of Community Colleges
Department of Crime Control and Public Safety
Department of Environment, Health and Natural Resources
Department of Human Resources
Department of Justice
Department of Public Instruction
Department of Revenue
Department of State Transportation
Employment Security Commission
Office of the State Controller
Office of the State Auditor
Office the State Treasurer
Office of State Management and Budget
State Information Processing Services (SIPS)
SIPS Advisory Board

- **Technology planning** - defining the process for making the plans substantive, for integrating the technology plans with the related agency program plans, and for coordinating the plans across the executive branch agencies

- **Technology management** - addressing issues common across the agencies regarding technical standards and procedures, service delivery to end users by SIPS and the agency IRM groups, performance against plans and service level targets, and approval of technology purchases

- **Telecommunications** - addressing planning and operating issues from a statewide perspective

- **SIPS** - addressing SIPS' relationship to its client agencies, and its internal management of its technical functions

The subcommittee also directed that detailed performance audits be conducted on the information technology and telecommunication functions of the following agency IRM groups:

- State Information Processing Services Division in the Office of the State Controller

- Department of Environment, Health and Natural Resources

- Department of Human Resources

- Department of Public Instruction

- Department of Revenue

- Department of the State Treasurer

- Department of State Transportation

- Employment Security Commission

- Legislative Automated Systems Division of the Legislative Services Commission

- Administrative Office of the Courts Information Services Division

Reporting

This is the Phase I performance audit report on information technology and telecommunications. It addresses and recommends solutions to the State's key problems and issues in the planning, management, and delivery of technology based services. The

report is prepared in two volumes. Volume I contains the executive summary; background, objectives and methodology; a synopsis of the current situation; and the findings and recommendations related to governance, planning, management, telecommunications, and SIPS. The second volume includes findings and recommendations related to the other agencies that were audited.

The key results and recommendations were reviewed with the subcommittee during scheduled open meetings. This document, in draft, was reviewed by the subcommittee and subsequently by the agencies discussed in it. The final report was reviewed and approved by the full GPAC commission.

Standards

This analysis was performed in conformance with generally accepted practices for an information technology diagnostic review and is in compliance with Government Auditing Standards. The analysis included: a preliminary survey of information technology and telecommunications operations and management policies and practices; detailed fieldwork in departmental operations of selected State agencies; a technical analysis of the State Computer Center operations; and the preparation of a Phase I report.

2. THE CURRENT SITUATION

The State of North Carolina manages and operates its information technology through Information Resource Management divisions in each of its 22 executive branch agencies and in the legislative and judicial branches. As of June 30, 1991, the State (excluding the campuses of the University of North Carolina system and the Community Colleges) had approximately:

- 900 positions funded for all three branches
- 6 mainframe computers in four of the 22 executive branch agencies
- 170 mid-range computers
- 8,000 personal computers
- 24,000 computer terminals
- 6 separately managed telecommunications networks

Appropriations for the annual operation of the State's information technology and telecommunications services totalled approximately $97 million. Exhibit 2-1 represents the staffing complements and annual budgets for information technology by agency for the year ending June 30, 1991.

North Carolina and its agencies have applied information technology to achieve some impressive accomplishments, such as:

- The North Carolina Integrated Network
- The Uniform Educational Reporting System
- A state-of-the-art mainframe computer at SIPS to support the agencies
- Voice response units across the State that provide convenient low-cost access to information on employment and benefits

However, the State has not yet been able to achieve other, more general statewide goals that are dependent on technology; for example:

- Improved program productivity and cost effectiveness that require uniformly high quality information system applications across all agencies

EXHIBIT 2-1

IRM EXPENDITURES AND PERSONNEL BY AGENCY

Agency	Total Expenditures	Number of Positions	Total Salaries
Legislative Branch			
Legislative Automated Systems Division	$ 1,595,900	13	$ 456,400
Judicial Branch/Administrative Office of the Courts			
Information Services Division	$ 5,267,300	63	$ 2,854,680
Executive Branch			
Department of Administration	$ 1,281,200	9	$ 301,945
Department of Agriculture	$ 1,314,900	17	$ 545,455
Department of Community Colleges	$ 1,600,600	16	$ 656,368
Department of Correction	$ 3,564,500	28	$ 1,100,628
Department of Crime Control and Public Safety	$ 2,676,200	10	$ 380,124
Department of Cultural Resources	$ 907,800	4	$ 78,554
Department of Economic and Community Development	$ 1,787,800	11	$ 377,512
Department of Environment, Health and Natural Resources	$ 7,632,200	45	$ 1,679,482
Department of Human Resources	$17,621,300	142	$ 5,222,216
Department of Insurance	$ 1,377,500	5	$ 192,125
Department of Justice	$ 6,153,700	46	$ 1,592,334
Department of Labor	$ 161,800	3	$ 72,059
Department of Public Instruction	$ 7,817,500	65	$ 2,446,889
Department of Revenue	$ 6,279,700	61	$ 2,387,626
Department of State Transportation	$12,634,800	90	$ 3,652,644
Department of State Treasurer	$ 1,253,000	15	$ 554,417
Employment Security Commission	$ 9,840,500	60	$ 2,446,430
Office of State Controller (Excluding SIPS)	$ 4,330,200	31	$ 1,686,900
Office of State Management and Budget	$ 410,300	6	$ 234,890
Office of State Personnel	$ 780,100	6	$ 284,584
Office of the State Auditor	$ 305,800	3	$ 111,606
Secretary of State	$ 443,800	1	$ 24,508
Executive Branch Subtotal	$90,175,200	674	$26,029,296
Grand Total	$97,038,400	750	$29,340,376

Sources: All Executive Branch data are from the 1991 Automated Information Processing Report and Plan, Section IV - Resource Summary.

Legislative and Judicial Branch data are from divisional reports.

Total staff positions are from the State's Personnel Management Information System.

- Timely access to accurate information that crosses programs and agencies, which requires effective integration of systems

- Cost effectiveness of the IRM function, which requires acquiring and training staff to the necessary levels of proficiency and focusing most of the effort on compatible current technologies

Potential benefit from information technology

The potential value to North Carolina from effective use of information technology is tremendous, both in terms of cost effectiveness of program operations and higher service levels to the citizens. To appreciate the magnitude of this potential, consider the Employment Security Commission (ESC).

ESC is one of the most ambitious and most effective agencies in the State in its use of information technology. It is also considered to be a leader among its sister agencies in other states. It has achieved so much productivity through automation that its federal reimbursement for operating expenses exceeds its actual operating costs.

Commissioner Duncan made a presentation to the State Computer Services Study Commission in April 1992. She indicated that ESC has been able to reduce central office personnel requirements from approximately 2,300 five years ago to about 1,720 by April 1992, as a result of its productivity gains from information technology.

Consider the following rough but conservative analysis of value:

- ESC has reduced its personnel requirements by more than 500

- The average annual personal services cost at ESC in fiscal 1991 was approximately $30,000

- The current annual value of that personnel reduction at the average annual cost is $15 million

- ESC's annual IRM expenditures for staff and SIPS processing in 1991 were $8.2 million

- Through automation ESC realized a net saving of $6.8 million in lower operating cost in 1991

This estimated value is extremely conservative because:

- ESC has increased both its breadth and level of services during the same period. To maintain its service delivery today without automation would require significantly more than 500 additional positions.

- ESC's expenditures for SIPS processing include a component for accumulation of reserve funds to cover upgrades when they become necessary, which is not a current cost for processing services used.

Such potential savings can be achieved by the other State agencies. However, several critical points are clear:

- These savings take years to realize

- They require continuing investment in information technology and consistently effective management of those efforts

- The savings continue to pay off, year after year, and should continue to grow each year

- The potential overall value to the State justifies the investments.

Current organization

Each branch of State government has an independent organizational structure to support its information resource management needs. This section provides an overview of these information technology functions.

Legislature

The General Assembly has centralized legislative services that are governed by the Legislative Services Commission (LSC). The LSC has staffing and administrative oversight of the operations of the General Assembly. It administers six divisions, including the Legislative Automated Systems Division (LASD). LASD is responsible for providing the automated application system, office automation, and computer operations support needed by the North Carolina General Assembly and its staff.

The computer applications required by these users include:

- Word processing

- Electronic mail

- Bill typing

- Bill status

- Access to the State Information Processing Services computer
- Data base management and spreadsheets

In addition, LASD supports such applications as the General Assembly's Payroll and Accounting System and Redistricting.

To support these applications, LASD maintains and operates a number of Digital Equipment Corporation (DEC) mini-computers and microcomputers:

- VAX 8650, 8700, and 6000/410 configured in a VAX Cluster
- VAX 11/730 (supporting payroll)
- 2 MicroVAXs
- VAX 3100
- VAXstation II

Judiciary

The Judicial branch operates an Information Services Division (ISD) through the Administrative Office of the Courts (AOC). ISD operates a mainframe data center and a telecommunications network that constitutes a centralized source of service and support for court operations across the State. ISD is responsible for the planning, design, development, maintenance, and operation of the automated systems within the AOC, as well as providing the computing resources to run these systems. ISD's mission is to help the court system take maximum advantage of technology for:

- Information processing
- Improved collection systems
- Facsimile equipment
- The computer-integrated courtroom
- Networking of Judicial branch offices
- Remote access to court records
- Providing information to the public

One of ISD's key objectives is to automate as many of the Court Clerk's functions as is cost-effective. AOC has moved aggressively into the use of Local Area Networks (LANs), and ISD is currently supporting the installation of LANs at a number of the larger County Courts.

ISD has a single mid-size IBM mainframe computer, Model 3090/300 running MVS ESA, supporting the development and production of its automated systems. Fourteen automated systems are maintained and operated by ISD. Major applications support the following court functions:

- Trial court case tracking
- Appellate court case tracking
- Trial court financial systems

Executive

Each of the 22 agencies operates its own IRM group to provide information system services to its divisions. The groups vary in size, technical capability, sophistication, and condition of their applications.

While these IRM groups may deal with data communications related to their information systems, they generally are not responsible to provide voice communication services to their respective agencies. In fact, most of the agencies, even the largest, have no designated manager directly responsible for voice communications or overall telecommunications.

The executive branch also has SIPS as its centralized IRM facility and source of services. SIPS is authorized by statute to serve all executive agencies and institutions except the Department of Justice and the University of North Carolina. It provides both information processing and telecommunication services.

The two primary advisory groups to SIPS are the Information Technology Commission and the SIPS Advisory Board.

Information Technology Commission. The ITC provides oversight of information technology management to SIPS and its client agencies and also approval authority with respect to SIPS. Its functions, as generally interpreted from the relevant statutes for the ITC and for SIPS, are:

- Policy approval
- Annual Information Processing Plan approval

- SIPS billing rates approval
- Major technology acquisition approval
- Arbitration and final authority to resolve disputes regarding information technology actions between the agencies and SIPS
- Statute recommendations

The enabling legislation for the ITC is G.S. 143B-426.21. Its specific powers and duties under that statute are:

- To approve or disapprove proposals by SIPS under its enabling legislation, G.S. 143B-426.40
- To obtain information relevant to these decisions from the affected departments
- To develop and submit to the General Assembly on the first day of each regular session a comprehensive plan, covering the current and subsequent biennium, for the acquisition and use of information technology resources in the affected departments.

The membership of the ITC under the statute is:

- Governor, Chairman
- Lieutenant Governor
- Secretary of the Department of Administration, Secretary
- State Budget Officer
- State Auditor
- State Treasurer
- Secretary of State
- Superintendent of Public Instruction
- Commissioner of Agriculture
- Commissioner of Labor
- Commissioner of Insurance

- State President of the Department of Community Colleges
- Chair of the Governor's Committee on Data Processing
- Chair of the SIPS Advisory Board
- Legislative Services Officer or his designee
- Appointee recommended by the President Pro Tempore of the Senate
- Appointee recommended by the Speaker of the House of Representatives

The full ITC convenes quarterly, and its Executive Subcommittee meets on the intervening months.

State Information Processing Services. SIPS operates within the Office of State Controller. Its mission is to provide information technology resources on a shared cost basis to the executive branch agencies and institutions, excluding the Department of Justice and the University of North Carolina.

SIPS was formed and is authorized to operate under G.S. 143B-426.40. Its specific powers and duties under that statute are:

- To operate information resource centers on a cost-sharing basis under the advice of the ITC
- With the approval of the ITC, to charge each department its proportionate cost for services performed
- With the approval of the ITC, to require any department to transfer control of its information technology equipment and positions to SIPS
- With the approval of the ITC, to adopt reasonable rules for the operation of the shared data center and the integrated State telecommunications network
- With the approval of the ITC, to adopt policies and procedures governing the use of information technology resources within the departments
- To provide training programs

The legislative intent appears to be to improve the availability and cost effectiveness of expensive or scarce information technology resources for all executive branch agencies through coordination and sharing of such resources across the agencies. The statute makes

most of SIPS' significant decisions and actions that affect its client agencies subject to the approval of the ITC.

SIPS services. SIPS provides primarily the following types of functional services to its client agencies:

- **Computer operations** - The State Computer Center (SCC) operates a central cost-shared computer center to support processing of application systems for various State government agencies. SCC runs an IBM ES/9000-900 mainframe computer. Data communication to all agencies is provided through the North Carolina Integrated Network. SCC also provides technical support services to its clients through a Help Desk.

- **Telecommunications** - State Telecommunications Services (STS) coordinates the voice, data, and video telecommunications systems and services provided to State agencies, including central telephone systems, the integrated voice and data statewide network, closed circuit TV, and more. It also provides technical assistance services to its clients.

- **Client support services** - Offers system design and development services, primarily to agencies that do not have their own technical staff, and end user training and support services in office automation functions and products.

- **IRM planning and policy** - Produces the annual IRM plan and prepares IRM policies, procedures, and guidelines.

SIPS organization. In January 1992, the Office of State Budget and Management published a SIPS Management Review report containing the results of a study directed by Dr. Allen Barwick. The study was requested by the Office of State Controller. It was conducted in depth and recommended extensive organizational changes affecting SIPS, the ITC, and the Office of State Controller. In February 1992, the Office of State Controller initiated a reorganization of SIPS enacting many of the key recommendations. Some critical aspects of the reorganization are still in the process of being implemented.

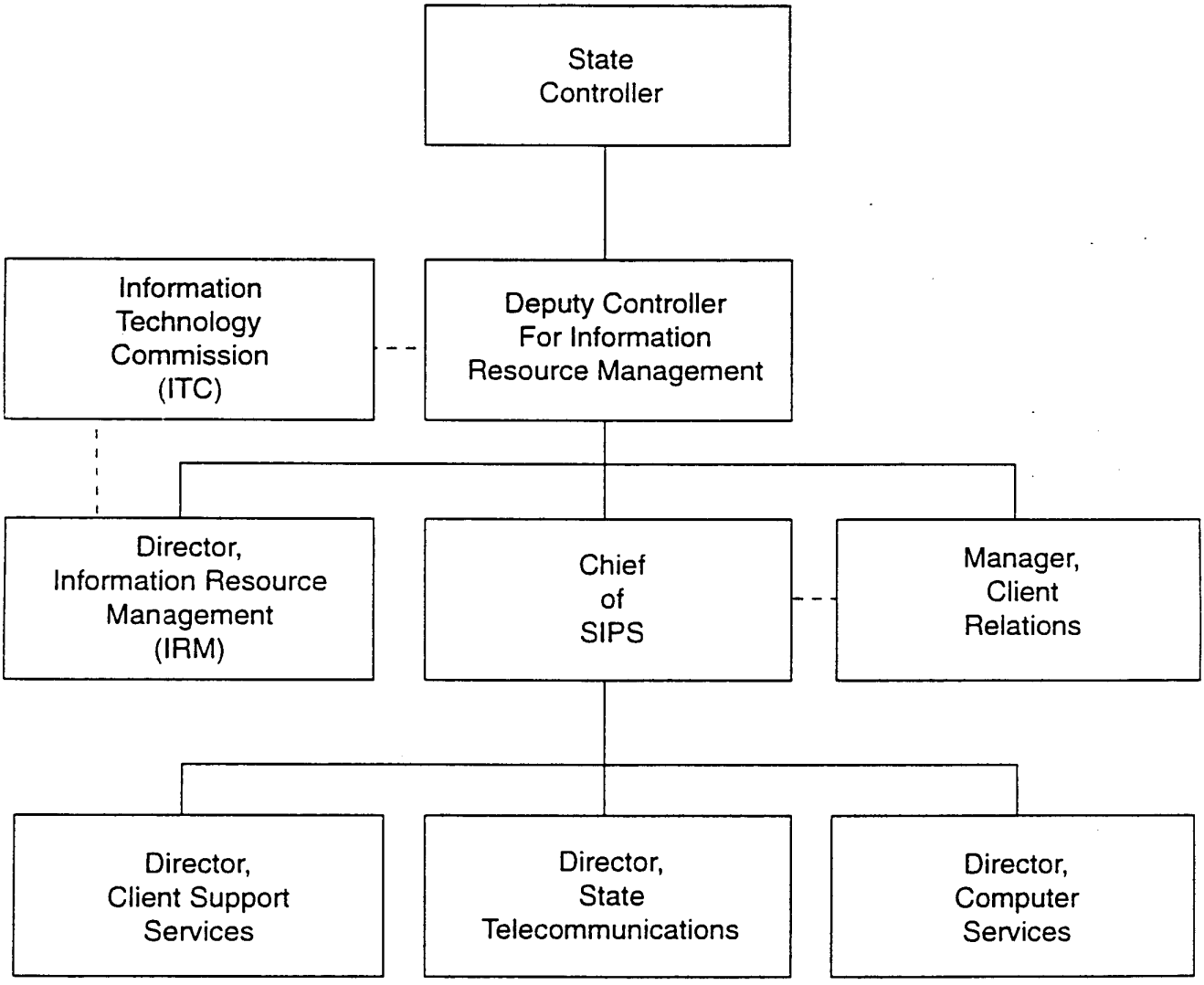
Exhibit 2-2 illustrates the current organization structure of SIPS within the Office of State Controller. The key organizational changes reflected in the new structure are:

- Creation of a position of Deputy Controller for Information Resource Management

- The removal of the planning and policy functions from SIPS to a new Information Resource Management group that is independent of SIPS and that reports directly to the Deputy Controller

- The removal of ITC staff support functions from SIPS to an independent group under direction of the Deputy Controller

Exhibit 2-2
State Information Processing Services Division (SIPS) Current Organization Structure



- The consolidation of all client support services under a single manager within SIPS
- The creation of a Client Relations Manager function within SIPS

SIPS funding. SIPS' operation is almost totally funded on a receipts-supported basis by charging its using agencies proportionately for services consumed. A series of internal service funds is used to account for these receipts. Billing rates for usage are intended to recover all the costs of shared service centers and to additionally accumulate a reserve for financing capacity growth. Approximately two percent of SIPS' operating budget is appropriated.

SIPS' budget, as reflected in the Annual Information Processing Report and Plan for Fiscal Year 1990-1991, has ranged from $28 million in fiscal year 1990 to $45 million in fiscal year 1993. It has consistently approximated one-third of the executive branch IRM budget. See Exhibit 2-3.

Agency information resource management

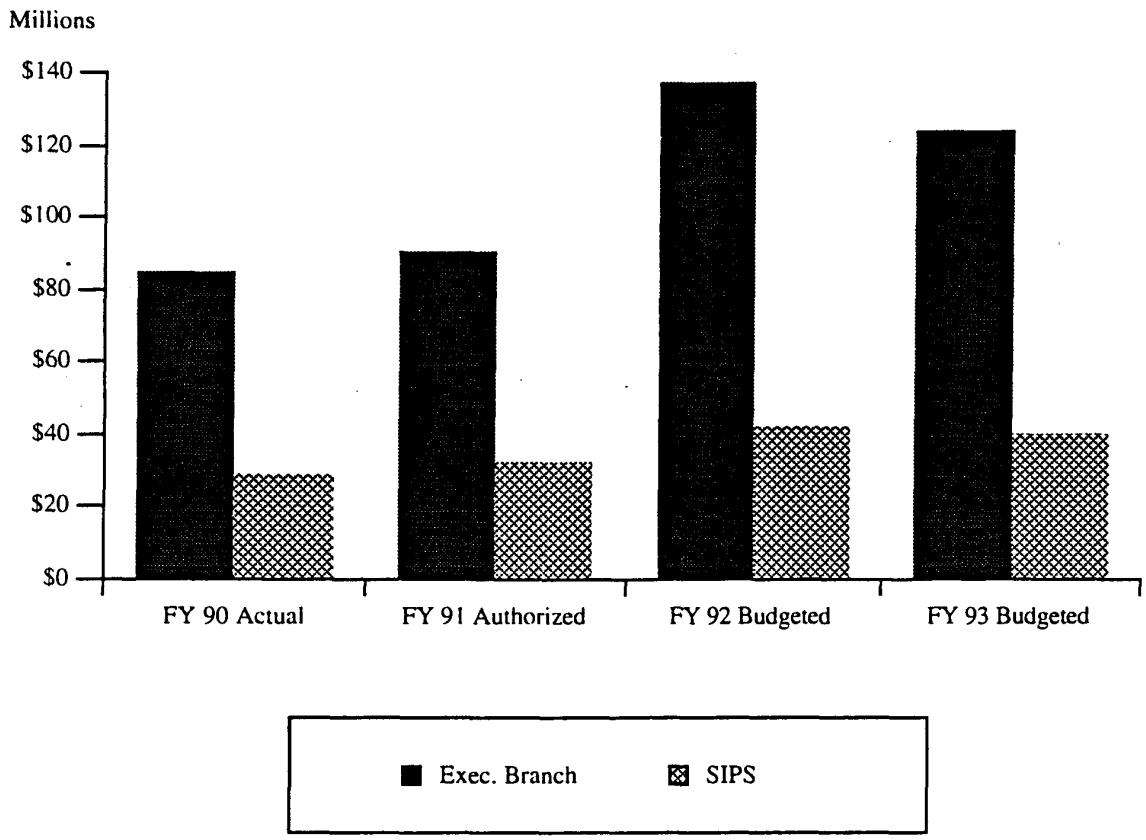
The Departments of Justice, Revenue, and the State Treasurer each operate their own mainframe data centers. The remaining executive branch departments all use SIPS for their computer processing.

Every agency has a designated IRM manager responsible for IRM planning for the agency. Most of these managers also supervise a staff of IRM specialists, varying from a few technicians in the smaller agencies, such as the Departments of Labor and Insurance, to over 140 highly technical and diverse professional staff in the Department of Human Resources.

Each agency, even if it uses SIPS' data center, is individually responsible for:

- Planning its IRM strategy within published ITC standards and directions
- Defining its information technology needs
- Managing the development of its new application systems
- Collecting and entering data for its application systems
- Scheduling and controlling its batch computer jobs
- Establishing resource requirements for on-line processing
- Providing office automation capability

Exhibit 2-3
SIPS' Budget Versus Executive Branch IRM Budget



- Providing local area networks (LANs)

SIPS Advisory Board

The SIPS Advisory Board is comprised of the IRM managers from all of SIPS' client agencies. The Employment Security Commission and its parent agency, the Department of Economic and Community Development, share one position on the board; each agency holds the position in alternating years. The board meets monthly with SIPS management, although meetings were conducted without SIPS management for two months during 1991.

The board's mission is to advise SIPS on agency plans, projects, and policies that may affect it and to maintain open communication between SIPS and the agency IRM managers.

Comparison with other states

There are several comparisons to other states' management of statewide IRM that provide a useful context for viewing North Carolina. These comparisons address budget, organization, funding, and number of major data centers. The data are derived from the 1990-1991 NASIRE report and from direct inquiries to various states.

Budget - Statewide budgets offer a broad and interesting basis of comparison. However, because of differences in accounting and reporting conventions, it is difficult to obtain fully consistent data to support direct comparisons, particularly for staffing levels and personal service costs. Therefore, the analysis tends to be more subjective than the figures might suggest. Exhibit 2-4 compares North Carolina to several states in terms of total budget, salary budget, and staffing for IRM. North Carolina's expenditures, staffing, and personal services costs for IRM are generally comparable to the other states on a percentage basis, except for two key differences.

First, the States of Maryland and South Carolina both spend much higher proportions of their budgets on technology than the other states listed. In both cases, a significant factor is the number of data centers run by those states. Maryland's budget covers eight major data centers, excluding the higher education system. More recently, Maryland consolidated the Baltimore data center into Annapolis. South Carolina's budget covers eight major data centers, including three in the higher education system. North Carolina, on the other hand, operates only three major data centers, excluding higher education.

The second major difference is that the State of Georgia incurs a substantially higher personnel cost per position than the other states, most likely because of the Atlanta marketplace.

Organization - NASIRE has found that states have been vesting increasing authority for IRM in central agencies in recent years to better manage the rapid growth of information

EXHIBIT 2-4

Comparison of IRM Budgets to State Budgets

	State Budget (billions)	IRM Budget (millions)	IRM as Percent of State Budget
South Carolina (1)	$9	$265	2.94%
Maryland	$12	$168	1.40%
North Carolina	$13	$97	0.75%
Georgia	$13	$89	0.68%
Virginia	$14	$89	0.64%

	IRM Budget (millions)	Personnel Budget (millions)	Personnel as Percent of IRM Budget	Positions	Average Cost per Position
South Carolina	$265	$79	29.81%	2,686	$29,412
Maryland	$168	$59	35.12%	1,760	$33,523
North Carolina	$97	$32	32.99%	900	$35,556
Georgia	$89	$26	29.21%	566	$45,936
Virginia (2)	$69	$21	30.43%	650	$32,308

Notes:

(1) IRM budget includes three higher education data centers.

(2) IRM budget for Department of Information Technology only, excluding four other major data centers.

technology based services in state government. Twenty states have reorganized IRM since January 1989. Nine of the states increased the authority of the central agency, and only two decreased it. In 25 states, policy and operations are combined in a single centralized agency.

Regarding IRM policy, North Carolina has been an early participant in the trend. When the State formed the ITC in 1983, only 11 other states had already centralized IRM policy management. Since then, 32 more states have followed suit. North Carolina is also one of the most centralized with respect to policy, with only two states being ranked as more centralized in the NASIRE report.

Regarding IRM operations, SIPS provides centralized operations for telecommunications and computer processing. Thirty-eight other states have a central agency for operations, and 26 of them include telecommunications in the central agency. The operations of 26 states were ranked as more centralized than North Carolina in the NASIRE report.

North Carolina is somewhat unusual in the degree of difference between its highly centralized approach to policy management and its more decentralized approach to operations. Only seven other states have an apparently greater difference between their approaches to these two aspects of IRM management.

Funding - Most states fund IRM functions either by direct appropriation or through revolving funds. North Carolina's funding structure fits with the majority of states.

- SIPS is funded 98 percent by a revolving fund and 2 percent by direct appropriation. The ITC, because of the structure of its membership, does not require separate funding.
- 24 states fund IRM primarily through revolving funds, with 22 states exceeding 90 percent funding.
- 15 states fund IRM primarily through direct appropriation, with 10 states exceeding 90 percent funding.
- 3 states fund IRM primarily through working capital funds.
- 4 states use other funding mechanisms.

Data centers - The states also vary widely in the number of major data centers (operating budgets of $5 million or more) that they run. North Carolina has three--SIPS, Department of Justice, and the Administrative Office of the Courts. Other states range from zero up to 18 major data centers. Exhibit 2-5 displays the distribution of numbers of data centers among the other states.

Exhibit 2-5
Distribution of States by Number of Major Data Centers